This review is **not comprehensive**. You should also study your class notes and HW. 1

Name: Key Date:
A2 CC-1: Q1T1 Some Review Materials Mr. Callahan

1) A = {1, 2, 3, 4, 5, 6}

B = {1, 3, 5, 7, 9}

C = {-2, -1, 0, 1, 2}

Both

$A \cap C = \{1, 2\}$

$A \cap B = \{1, 3, 5\}$

OR

$A \cup B = \{1, 2, 3, 4, 5, 6, 7, 9\}$

$B \cup C = \{-2, -1, 0, 1, 2, 3, 5, 7, 9\}$

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2) A dice is rolled. Give an example of two **mutually exclusive** events.

A = Rolling a 4 B = Rolling a 5

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3) $P(A|B) = \frac{P(A \text{ and } B)}{P(B)}$

6) $P(Q|W) = \frac{P(Q \cap W)}{P(W)}$

4) A study was designed to test the effectiveness of a new medicine. One half of the volunteers received the medicine. The other half received a sugar pill. The probability of a volunteer receiving the medicine and getting well was 35%. What was the probability of a volunteer getting well, given that the volunteer received the medicine?

$P(\text{Get well} \mid \text{received medicine}) = \frac{P(\text{Get well and received medicine})}{P(\text{receive medicine})}$

$= \frac{35\%}{50\%} = \frac{.35}{.50} = .70 \text{ or } 70\%$

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5) Mr. Williams determined that of his students, 7.3% play baseball, B, 9.2% play soccer, S, and 3.4% do both.

Determine the probability of S given B, to the nearest tenth of a percent.

$P(S|B) = \frac{P(S \cap B)}{P(B)} = \frac{.034}{.073} = .4657 \Rightarrow 46.57\%$

46.6%

6) If A and B are **independent** events, then $P(A|B) =$ $P(A)$ and $P(B|A) =$ $P(B)$

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7) The results of a survey of the student body at Central High School about television viewing preferences are shown below.

	Comedy Series	Drama Series	Reality Series	Total
Males	95	65	70	230
Females	80	70	110	260
Total	175	135	180	490

Are the events "student is a male" and "student prefers reality series" independent of each other? Justify your answer.

$P(\text{student is male}) = P(\text{student is male given they prefer reality series})$

$\frac{230}{490} \neq \frac{70}{180}$

$.469 \neq .389$

Not independent

8) Mr. Callahan's team has a baseball game tomorrow. He pitches 60% of the games. There is a 35% chance of rain during the game tomorrow. If the probability that it rains given that Mr. Callahan pitches is 35%, it can be concluded that these two events are

Probability stayed @ 35%
therefore the events are independent.

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(1) independent (2) dependent (3) mutually exclusive (4) complements

9) Give an example of two events that are **complements.**

A = Rolling an even on a die B = Rolling an odd on a die

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10) If $P(A)=0.8$, $P(B)=0.73$, and $P(A\cap B)=0.65$, determine $P(A\cup B)$.

$P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$P(A \cup B) = .8 + .73 - .65$

$P(A \cup B) = .88$

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11) RHS has a population of 1,186 students. The number of students who like the school paninis is 253. The number of students who like the school fries is 436. If the probability that a student likes either the paninis or the fries is $\frac{632}{1186}$, what is the probability that a student likes the paninis **and** the fries?

$P(OR) = P(Panini) + P(Fries) - P(Both)$

$\frac{632}{1186} = \frac{253}{1186} + \frac{436}{1186} - \frac{x}{1186}$

$632 = 253 + 436 - x$

$632 = 689 - x$

$-57 = -x$

$x = 57$

$P(Both) = \frac{57}{1186}$

12) Data collected about jogging from students with two older siblings are shown in the table below.

	Neither Sibling Jogs	One Sibling Jogs	Both Siblings Jog
Student Does Not Jog	1168	1823	1380
Student Jogs	188	416	400
	1356	2239	1780

Using these data, determine whether a student with two older siblings is more likely to jog if one sibling jogs or if both siblings jog. Justify your answer.

One sibling

$\frac{416}{2239}$

$.1858$

18.58%

Both

$\frac{400}{1780}$

$.2247$

22.47%

More likely to jog if both siblings jog

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13) The set of data in the table below shows the results of a survey on the number of messages that people of different ages text on their cell phones each month.

Age Group	Text Messages per Month		
	0–10	11–50	Over 50
15–18	4	37	68
19–22	6	25	87
23–60	25	47	157

229 total

If a person from this survey is selected at random, what is the probability that the person texts over 50 messages per month given that the person is between the ages of 23 and 60?

only look there

$\frac{157}{229} = 68.6\%$

14) Which of the following cannot be the probability that an event occurs?

(1) $\frac{3}{5}$

(2) 0.49

(3) 1.25 Cannot be greater than 1

(4) $\frac{1}{2}$

15) If a standard six sided die is rolled once, what is the probability that the number rolled is either an even or a multiple of 3?

$P(\text{Even or Multiple of 3}) = P(\text{Even}) + P(\text{Multiple of 3}) - P(\text{Both})$

$= \frac{3}{6} + \frac{2}{6} - \frac{1}{6} = \frac{4}{6} = \frac{2}{3}$

1 2 3 4 5 6

16) A single standard six-sided die is rolled. What is the probability the roll is a multiple of three given that it is an even number?

$P(\text{Multiple of 3} \mid \text{Even}) = \frac{n(\text{Both})}{n(\text{Even})} = \frac{1}{3}$